

National Weather Service HAZMAT Support

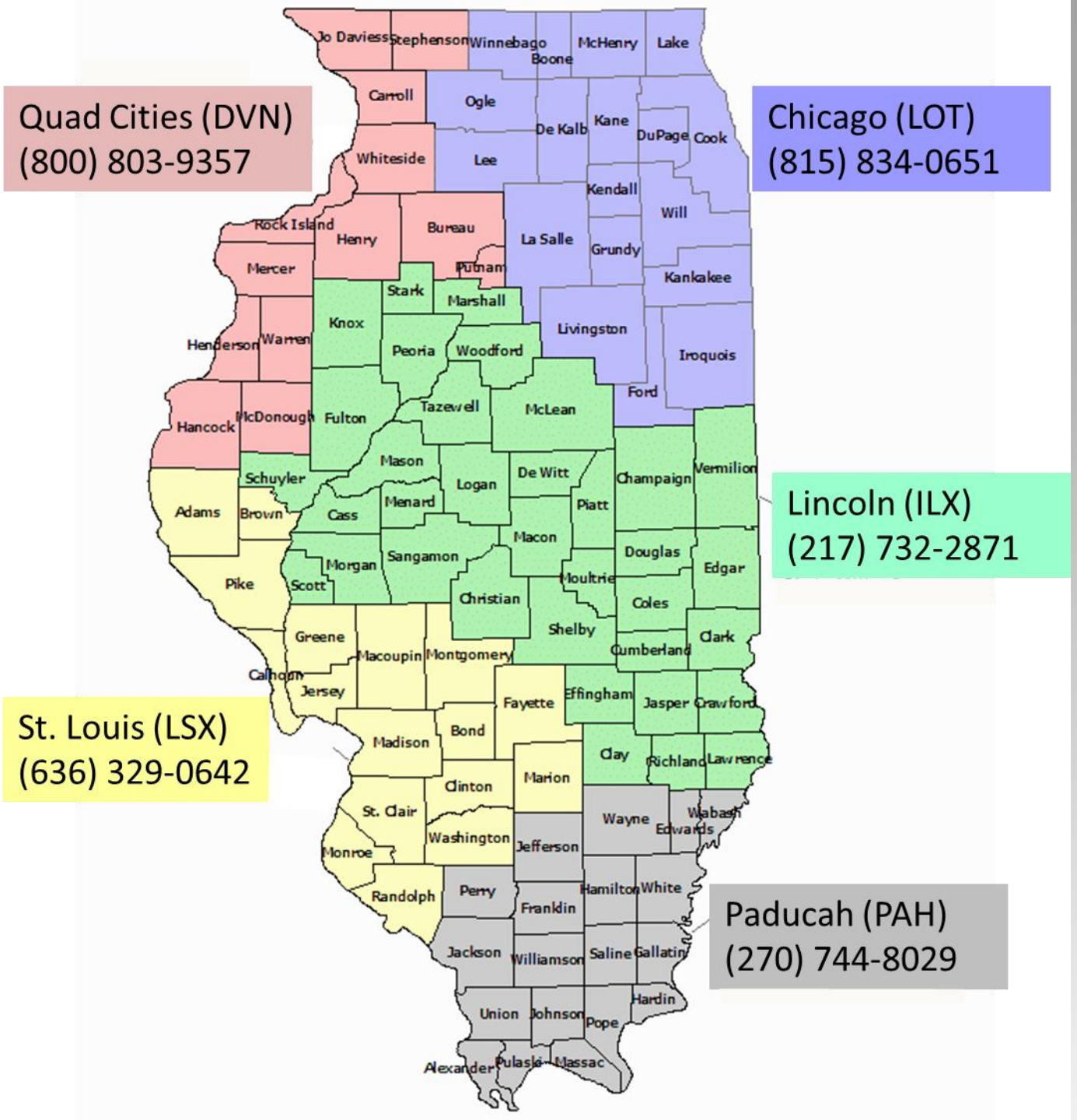
Jamie Enderlen – Chicago, IL

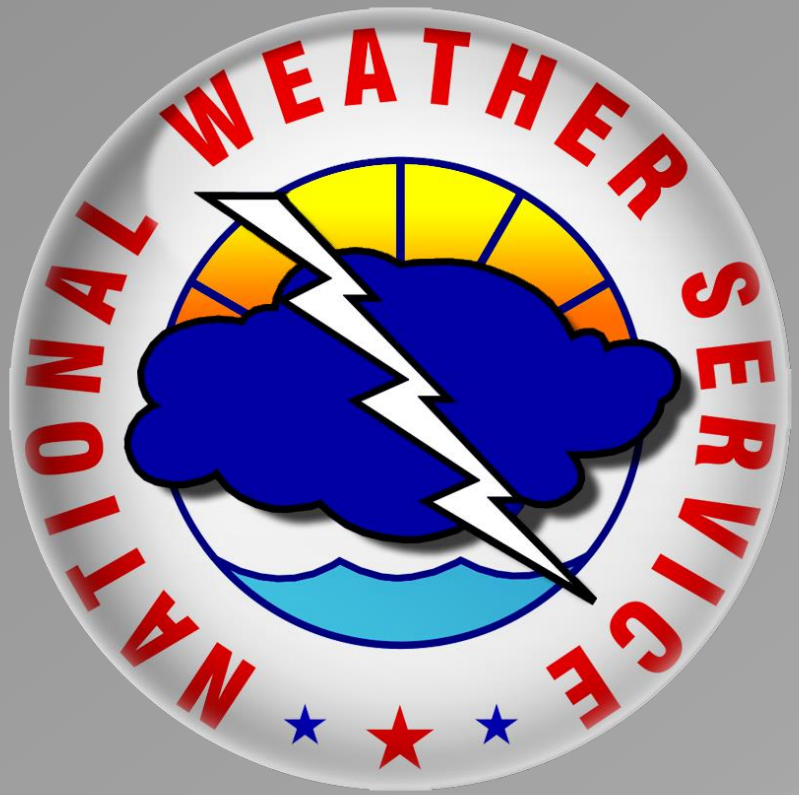
Chris Miller – Lincoln, IL

“Prepare for the unknown by studying how others in the past have coped with the unforeseeable and the unpredictable.”

- Gen. George S. Patton

WHO IS THE NATIONAL WEATHER SERVICE?


Quad Cities (DVN)
(800) 803-9357
Chicago (LOT)
(815) 834-0651
Lincoln (ILX)
(217) 732-2871
St. Louis (LSX)
(636) 329-0642
Paducah (PAH)
(270) 744-8029
Jo Daviess
Stephenson
Winnebago
Boone
McHenry
Lake
Carroll
Ogle
De Kalb
Kane
DuPage
Cook
Whiteside
Lee
Kendall
Will
Rock Island
Henry
Bureau
La Salle
Grundy
Mercer
Putnam
Kankakee
Stark
Marshall
Knox
Livingston
Henderson
Warren
Peoria
Woodford
Iroquois
Ford
Hancock
McDonough
Fulton
Tazewell
McLean
Mason
Champaign
Vermilion
Schuyler
Logan
De Witt
Adams
Brown
Cass
Menard
Piatt
Macon
Douglas
Edgar
Morgan
Sangamon
Pike
Scott
Moultrie
Christian
Coles
Shelby
Greene
Clark
Macoupin
Montgomery
Cumberland
Calhoun
Jersey
Fayette
Effingham
Jasper
Crawford
Madison
Bond
Clay
Richland
Lawrence
Clinton
Marion
St. Clair
Wayne
Wabash
Washington
Jefferson
Edwards
Monroe
Hamilton
White
Randolph
Perry
Franklin
Jackson
Williamson
Saline
Gallatin
Hardin
Union
Johnson
Pope
Alexander
Pulaski
Massac



Provide weather, water, and climate data, forecasts and warnings for the ***protection of life and property*** *and enhancement of the national economy*.

Standard Operations

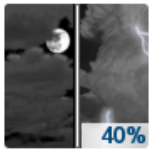
Current conditions at
Springfield - Abraham Lincoln Capital Airport (KSPI)
Lat: 39.85°N Lon: 89.68°W Elev: 587ft.

Fair
61°F
16°C

Humidity	81%
Wind Speed	Calm
Barometer	30.07 in (1018.0 mb)
Dewpoint	55°F (13°C)
Visibility	10.00 mi
Last update	21 Aug 3:52 am CDT

More Information:
Local Forecast Office
More Local Wx
3 Day History

Extended Forecast for
Springfield IL

Today	Tonight	Saturday	Saturday Night	Sunday	Sunday Night
					
Sunny	Mostly Clear	Mostly Sunny	Mostly Cloudy then Chance T-storms	Chance T-storms	Mostly Clea
High: 83 °F	Low: 58 °F	High: 83 °F	Low: 66 °F	High: 80 °F	Low: 57 °F

```
TAF
KORD 1011432 1012/1118 30012KT P6SM SCT040
     FM101330 29012KT P6SM BKN040
     FM101600 28009KT P6SM FEW040 SCT150
     FM110400 22007KT P6SM BKN120
     FM111100 27010KT P6SM SCT060 BKN090
     FM111500 30012G18KT 6SM -RA BR BKN030 OVC080=
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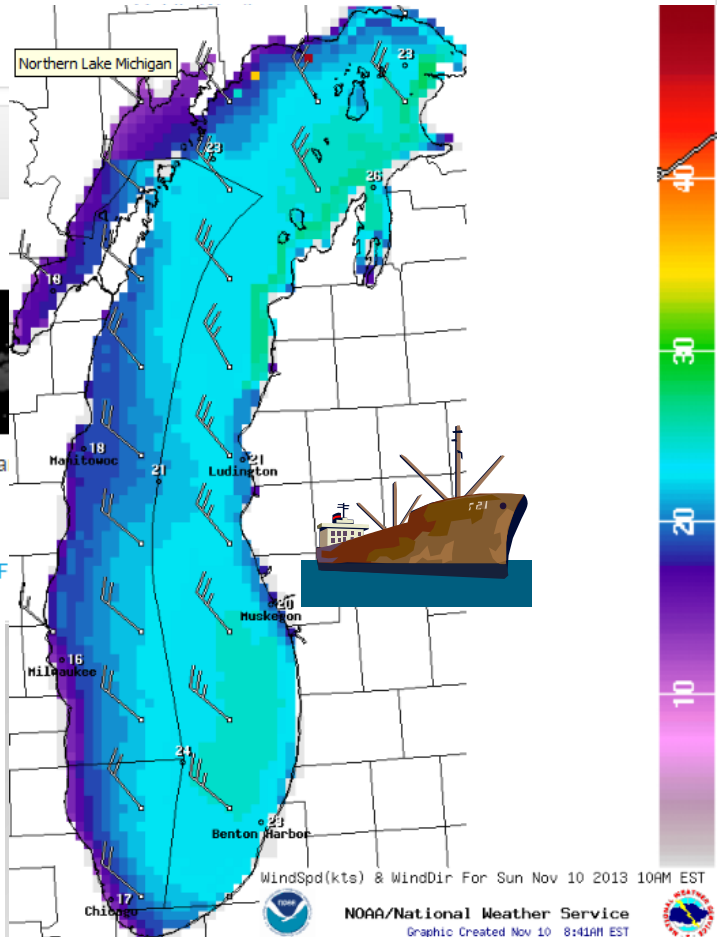
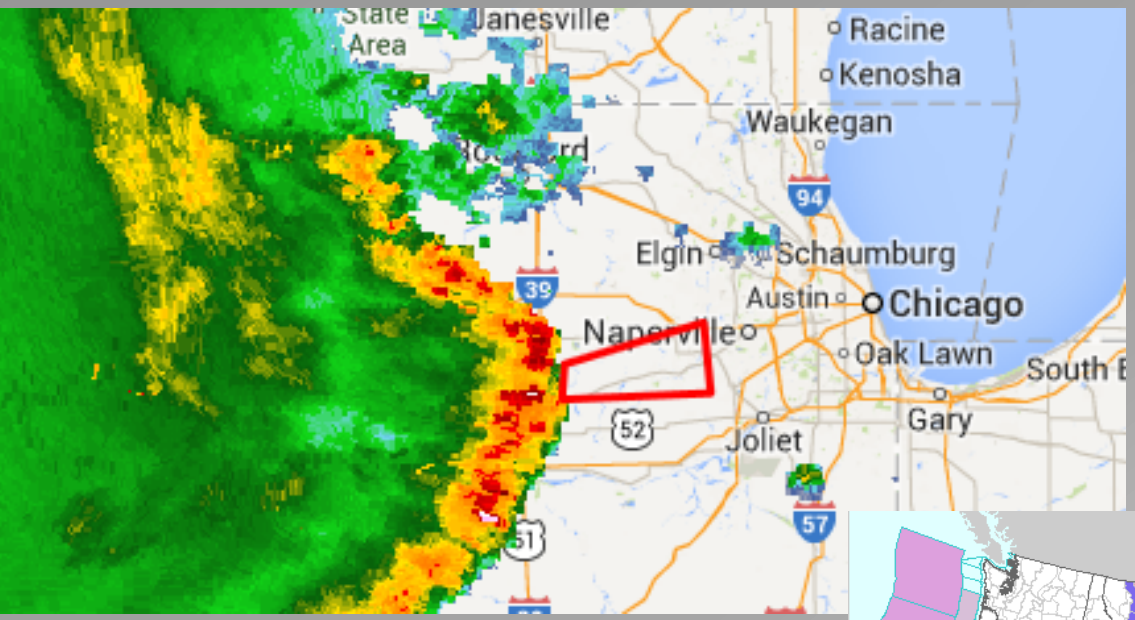
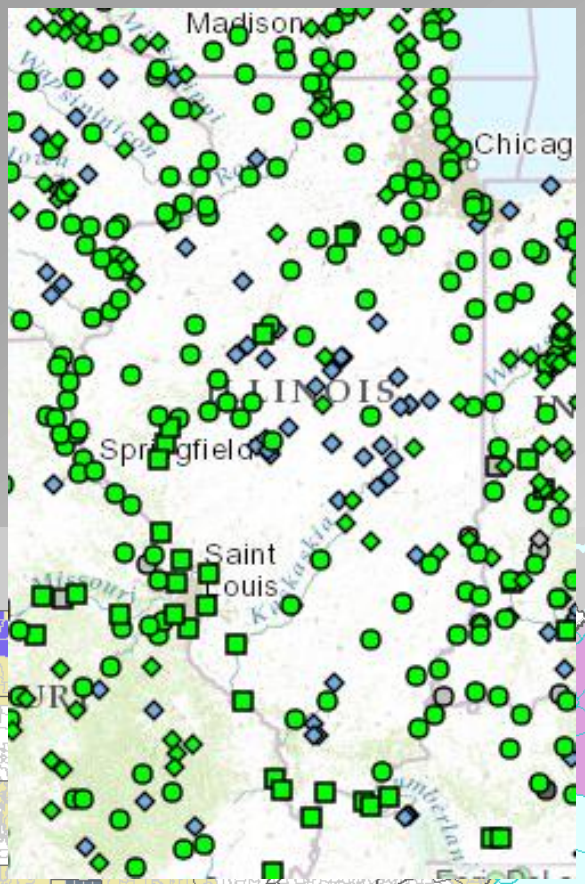
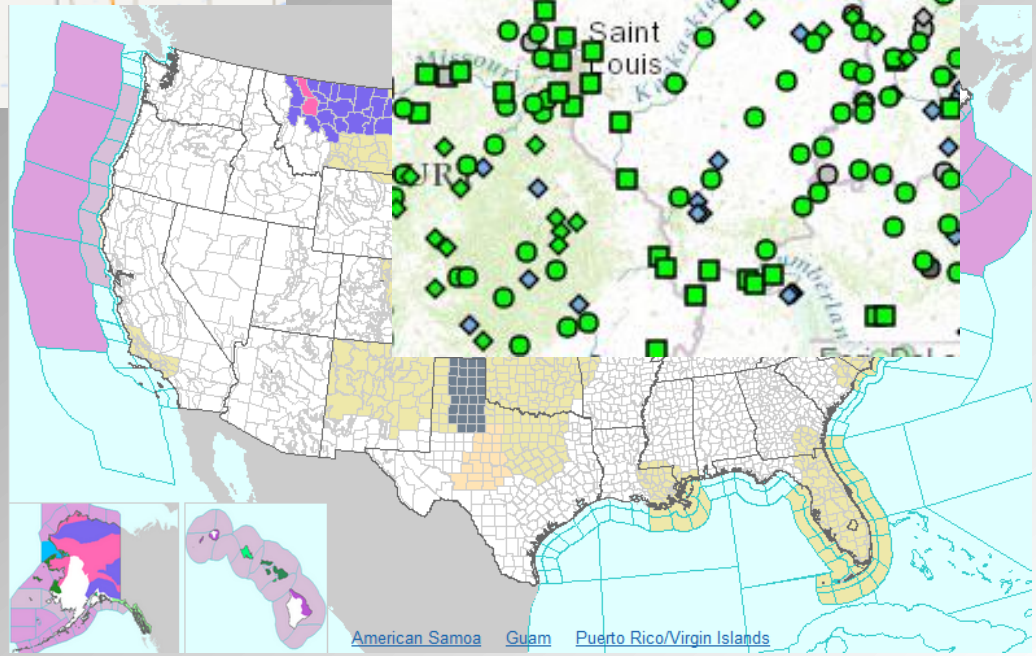


Hazardous Weather Operations



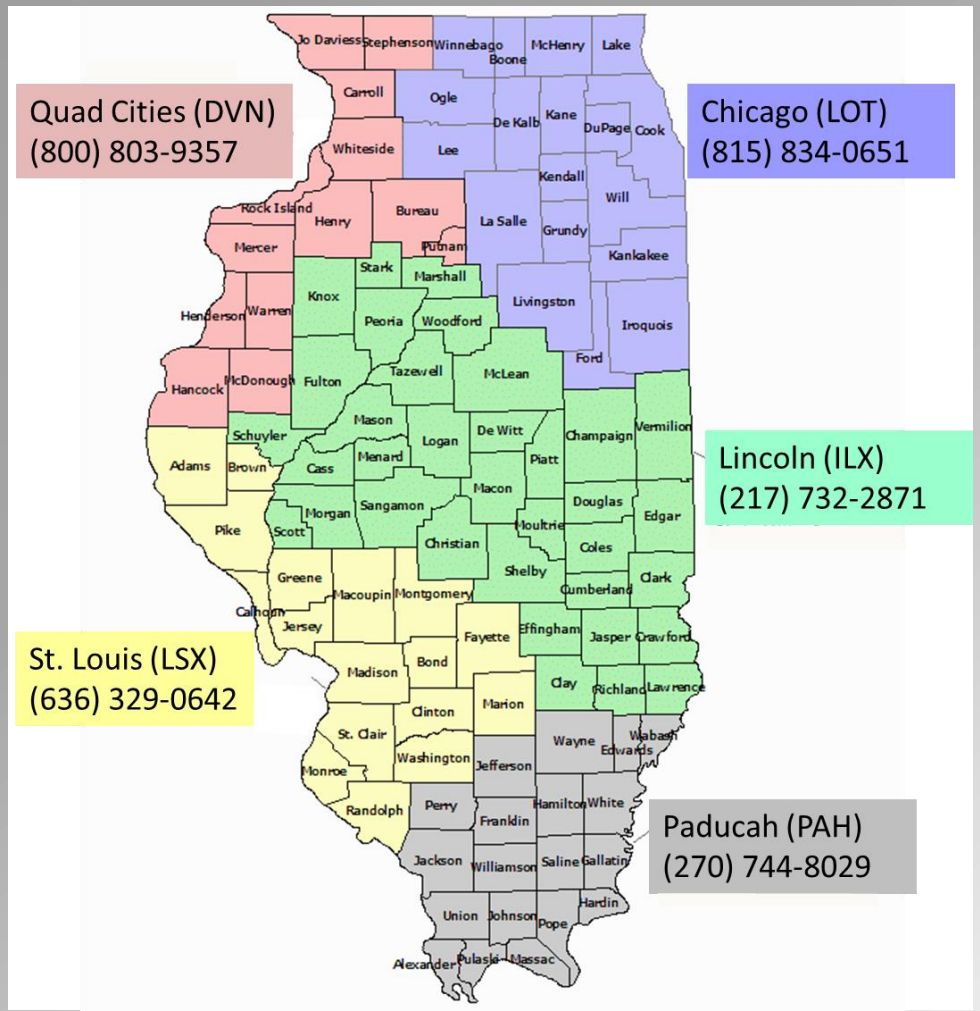


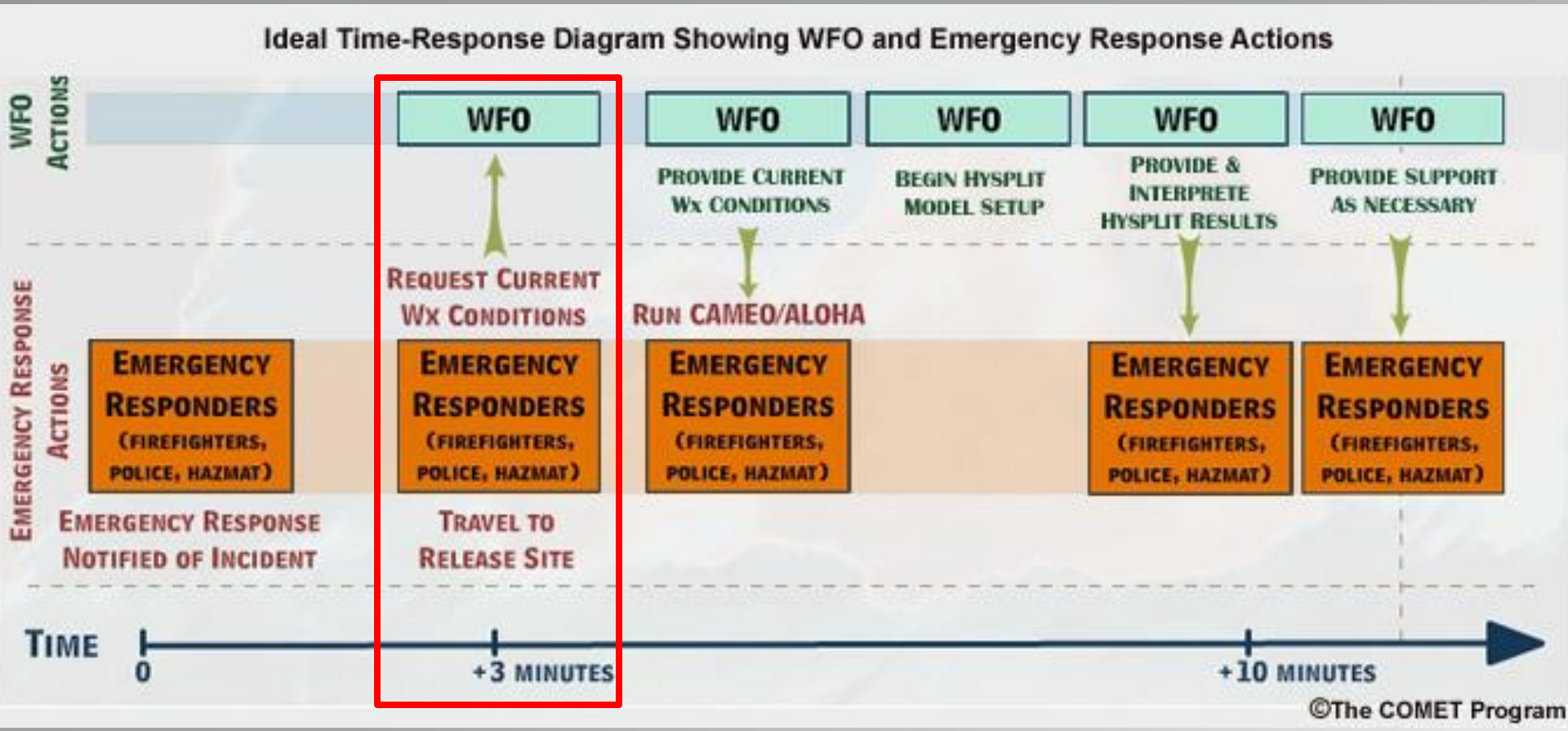


RESPONSE PHASE

In the Event of a HazMat Situation…

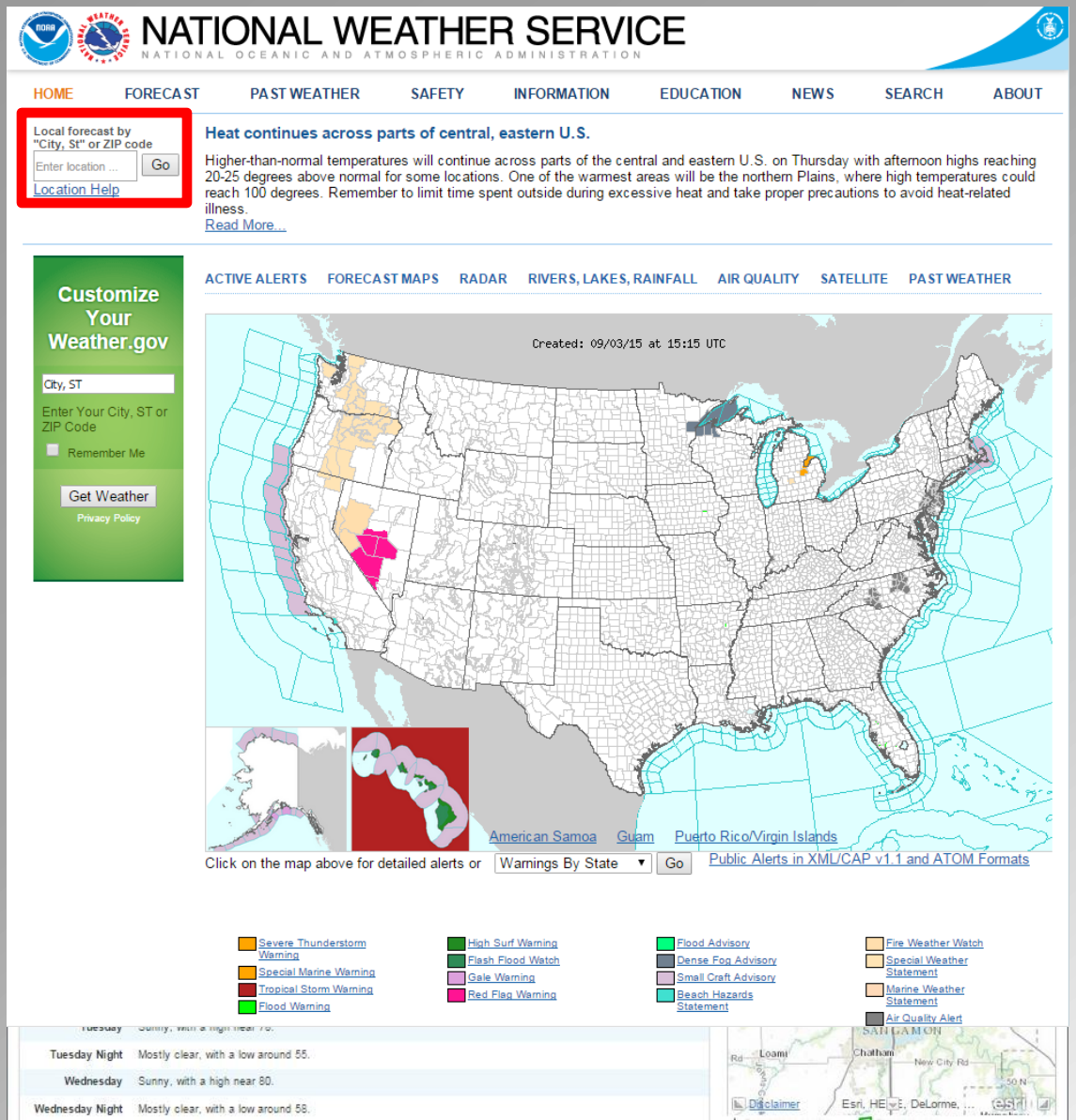
CALL US!




Ideal Time-Response Diagram Showing WFO and Emergency Response Actions
WFO Actions
Emergency Response Actions
WFO
WFO
WFO
WFO
WFO
Request Current Wx Conditions
Provide Current Wx Conditions
Begin HYSPLIT Model Setup
Provide & Interprete HYSPLIT Results
Provide Support As Necessary
Run CAMEO/ALOHA
Emergency Responders (Firefighters, Police, HazMat)
Emergency Responders (Firefighters, Police, HazMat)
Emergency Responders (Firefighters, Police, HazMat)
Emergency Responders (Firefighters, Police, HazMat)
Emergency Responders (Firefighters, Police, HazMat)
Emergency Response Notified of Incident
Travel to Release Site
Time
0
+3 minutes
+10 minutes
©The COMET Program

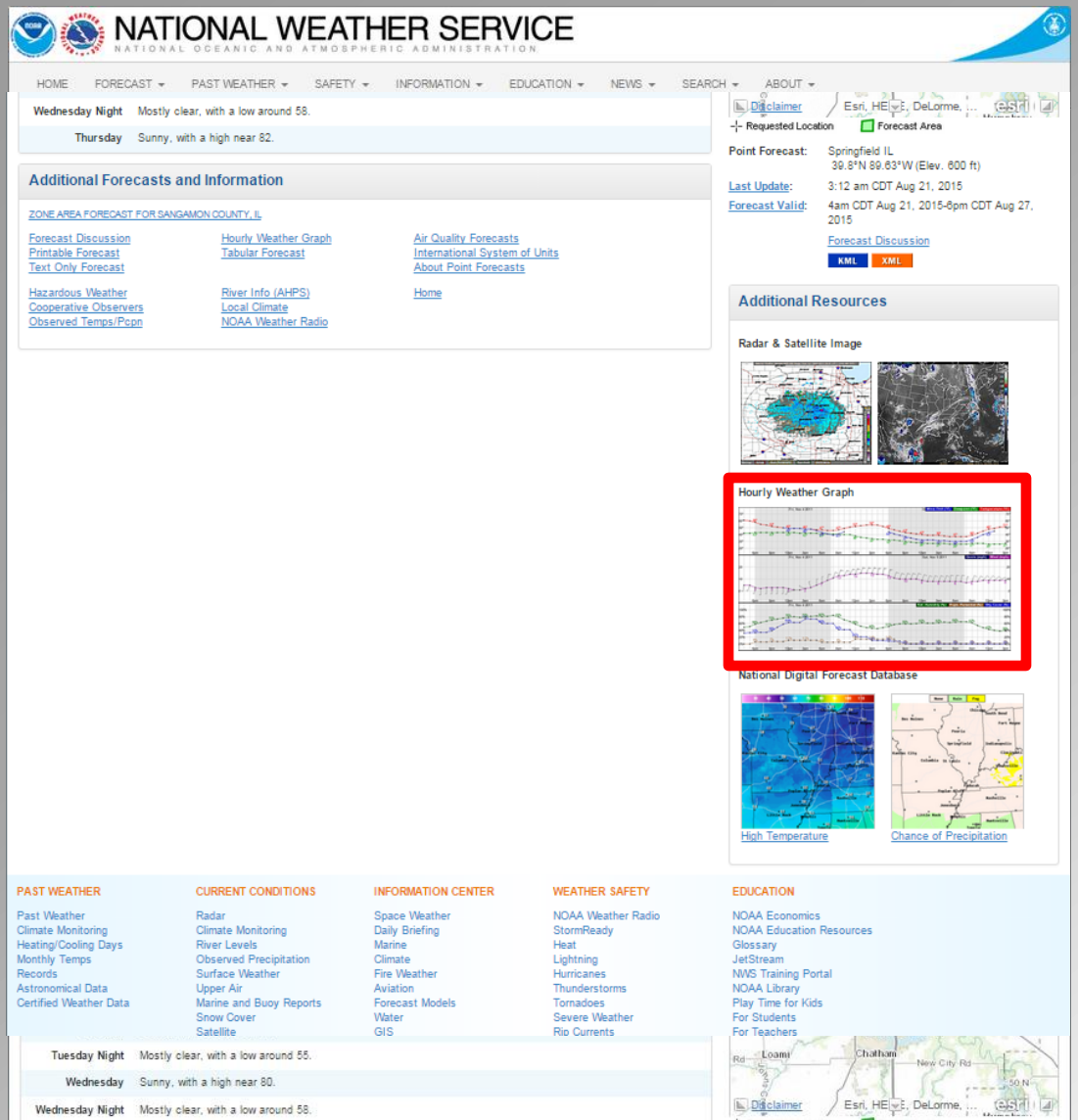
7 Day Narrative

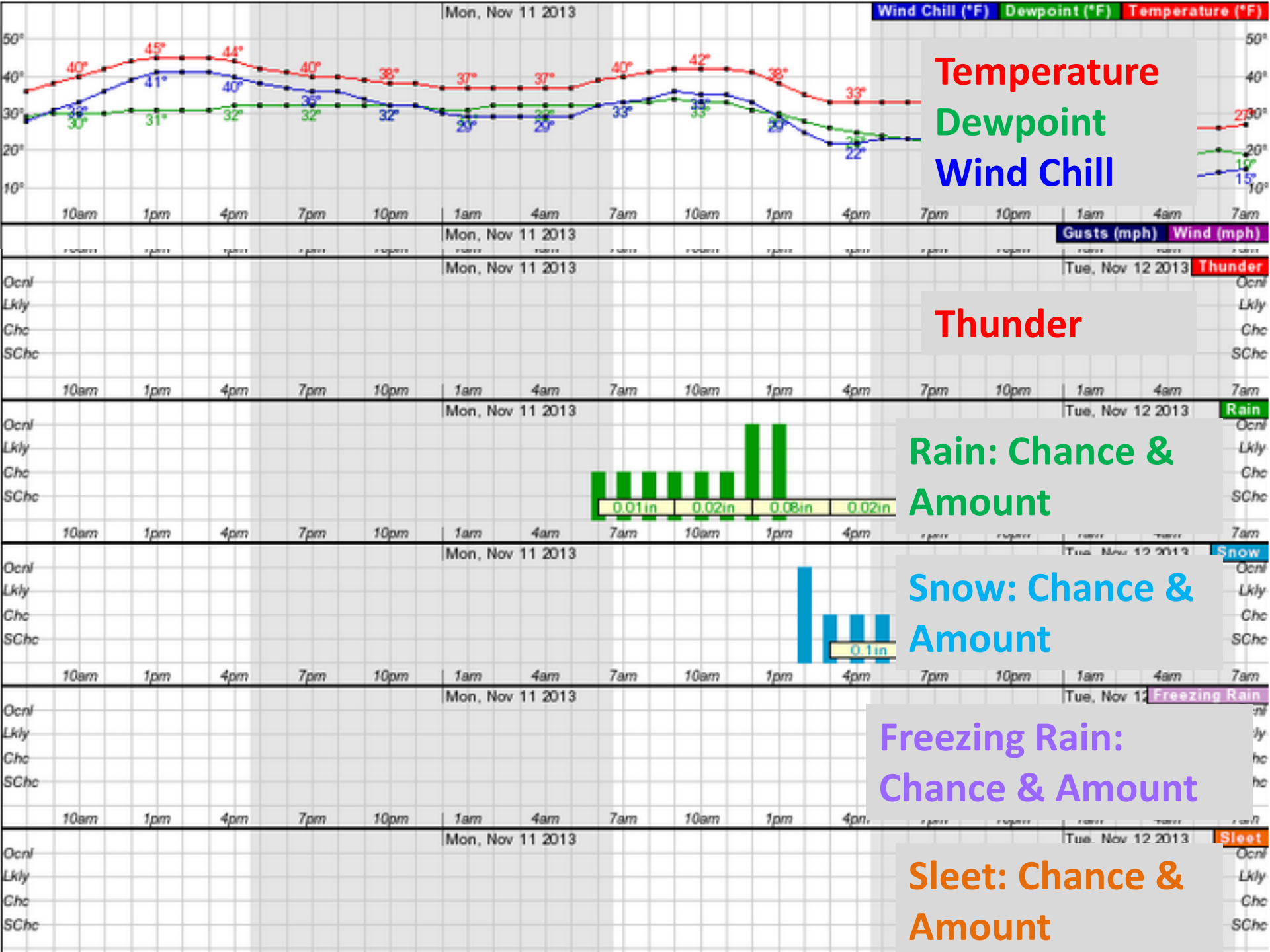
http://www.weather.gov



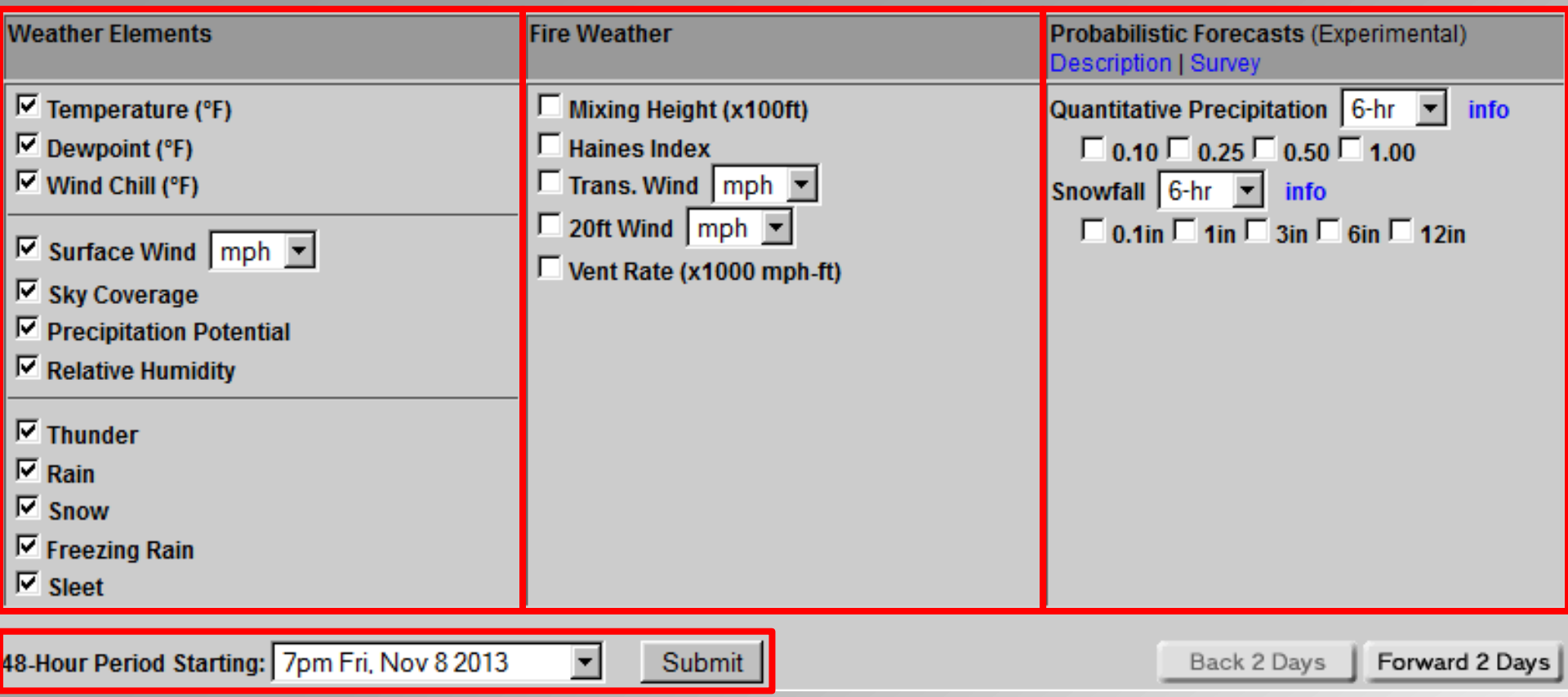
Hourly Weather Forecasts

http://www.weather.gov

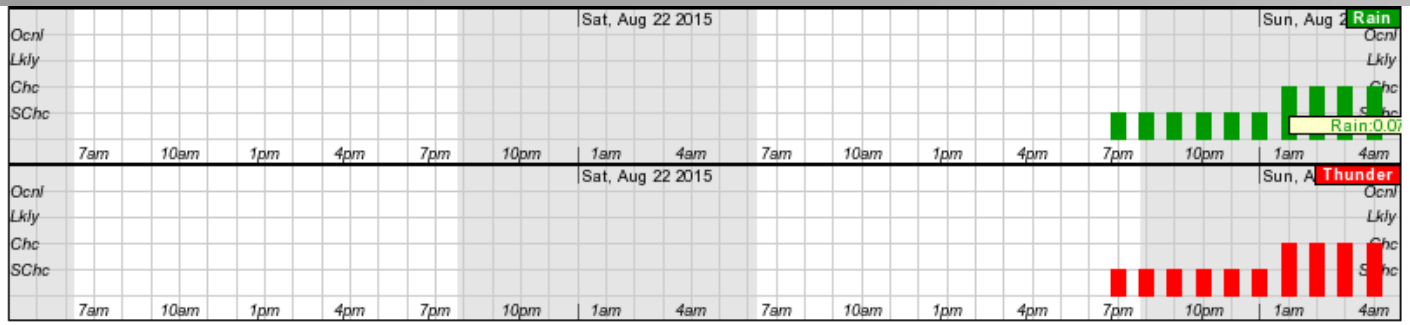



Mon, Nov 11 2013
Wind Chill (°F)
Dewpoint (°F)
Temperature (°F)
Temperature
Dewpoint
Wind Chill
Gusts (mph)
Wind (mph)
Tue, Nov 12 2013
Thunder
Ocnl
Lkly
Chc
SChc
Rain
0.01in
0.02in
0.08in
0.02in
Rain: Chance & Amount
Snow
0.1in
Snow: Chance & Amount
Freezing Rain
Freezing Rain: Chance & Amount
Sleet
Sleet: Chance & Amount
10am
1pm
4pm
7pm
10pm
1am
4am
7am

Hourly Weather Graph

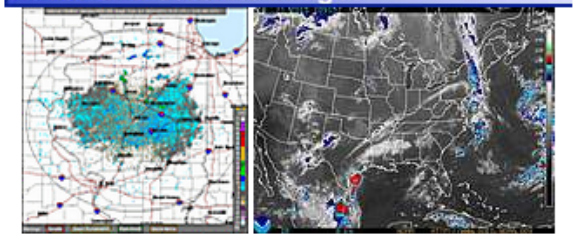


Hourly Table



Friday, August 21 at 5am
Temperature: 58 °F Dewpoint: 55 °F Heat Index: N/A Surface Wind: SE 3mph
Sky Cover (%): 8% Precipitation Potential (%): 0% Relative Humidity (%): 90%
Rain: <10% Thunder: <10%

Radar and Satellite Images



Additional Forecasts & Information

International System of Units	Forecast Discussion
7-Day Forecast	Tabular Forecast
Hazardous Weather	Cooperative Observers
Observed Temps/Pcpn	River Info (AHPS)
Local Climate	NOAA Weather Radio
Home	

Webmaster
NOAA's National Weather Service
Lincoln, IL

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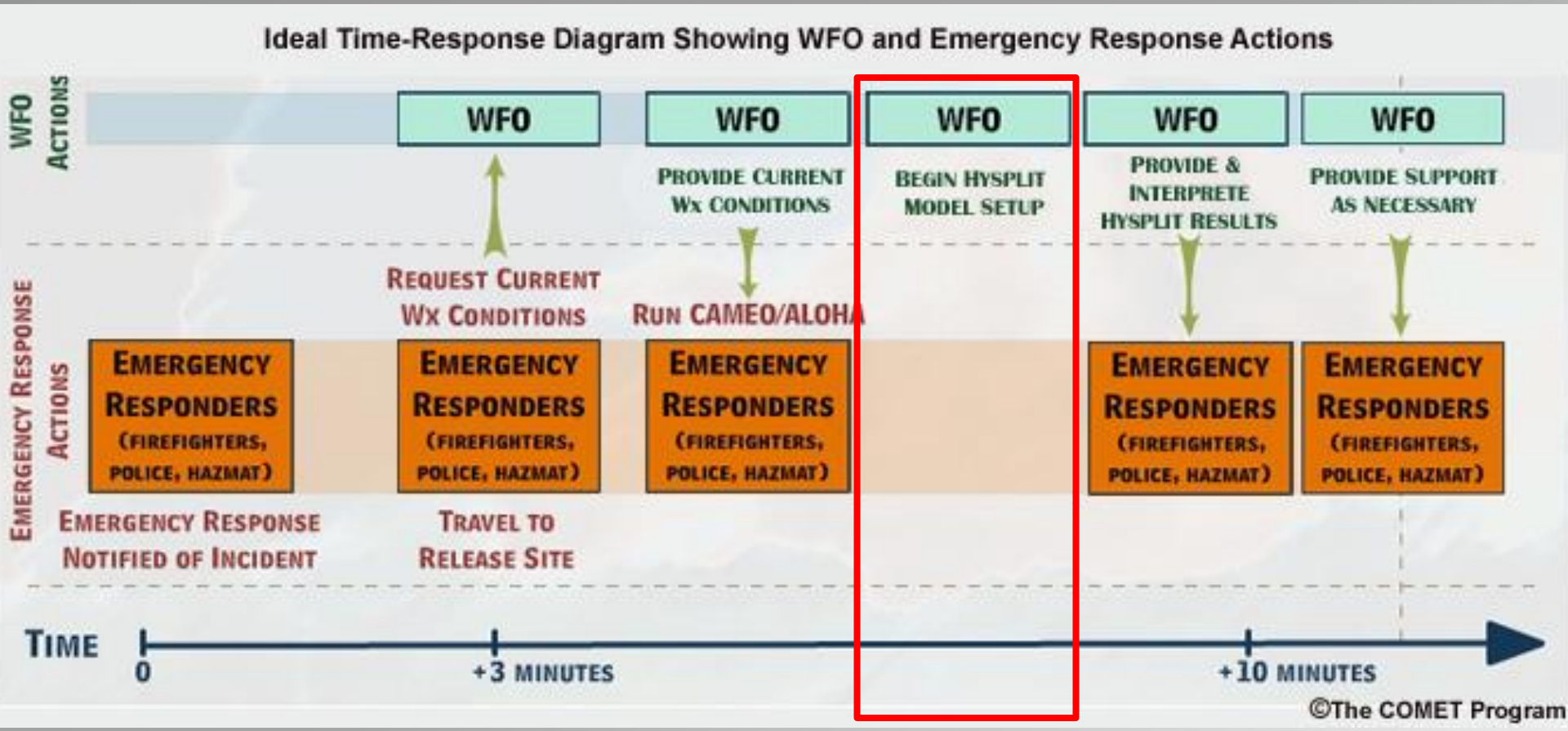
Career Opportunities

Hourly Table

Date	11/10														11/11									
Hour (CST)	10	11	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09
Temperature (°F)	40	42	44	45	45	45	44	42	41	40	40	39	38	38	37	37	37	37	37	37	39	40	41	42
Dewpoint (°F)	30	30	31	31	31	31	32	32	32	32	32	32	32	32	31	31	32	32	32	32	32	33	33	34
Wind Chill (°F)	33	36	39	41	41	41	40	38	37	36	36	34	32	32	30	29	29	29	29	29	32	33	34	36
Wind (mph)	16	14	13	11	9	8	7	7	6	6	7	7	8	9	10	11	11	11	11	11	11	11	11	11
Wind Dir	WNW	WNW	WNW	WNW	W	W	W	WSW	WSW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	WSW	WSW	W	WNW	WNW
Gust																16	17	18	18	18	17	17	18	18
Sky Cover (%)	13	15	18	20	23	25	27	30	32	40	48	57	65	73	81	84	87	91	94	97	100	100	100	100
Popn. Potential (%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	29	29	34
Rel. Humidity (%)	67	62	60	58	58	58	62	67	70	73	73	76	79	79	79	79	82	82	82	82	76	76	73	73
Thunder	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rain	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Chc	Chc	Chc	Chc
Snow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Freezing Rain	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sleet	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--


Ideal Time-Response Diagram Showing WFO and Emergency Response Actions
WFO Actions
WFO
WFO
WFO
WFO
WFO
Provide Current Wx Conditions
Begin HYSPLIT Model Setup
Provide & Interprete HYSPLIT Results
Provide Support As Necessary
Request Current Wx Conditions
Run CAMEO/ALOHA
Emergency Response Actions
Emergency Responders (Firefighters, Police, HazMat)
Emergency Responders (Firefighters, Police, HazMat)
Emergency Responders (Firefighters, Police, HazMat)
Emergency Responders (Firefighters, Police, HazMat)
Emergency Responders (Firefighters, Police, HazMat)
Emergency Response Notified of Incident
Travel to Release Site
Time
0
+3 minutes
+10 minutes
©The COMET Program

HYSPLIT

- **Dispersion modeling for chemical, biological, or radioactive releases**
- **Estimates air concentration or exposure at locations downwind**
- **Appropriate for releases:**
  - **Longer than 1 hour**
  - **1 KM above the ground and higher**
  - **Horizontal extent >10 KM (about 6 Mi)**
- **Use as a decision aide**

HYSPLIT Positives

- **Uses numerical weather prediction models**
  - **Terrain resolved by model**
  - **Weather conditions vary**
- **User can edit guidance**
- **New guidance available every 1-6 hours**
- **Complete run available in minutes**
- **Results in GIF, PDF, KMZ (Google Earth), GIS shapefiles**
- **Can incorporate aspects of ALOHA (source strength) into the run IF we know the specific chemical & many other details about the incident**

HYSPLIT Negatives

- **Not intended for dense gases**
- **No source characteristics other than release height and amount**
- **Assumes a steady emission rate**
- **Does not account for byproducts from fires, explosions, or chemical reactions**

HYSPLIT Negatives

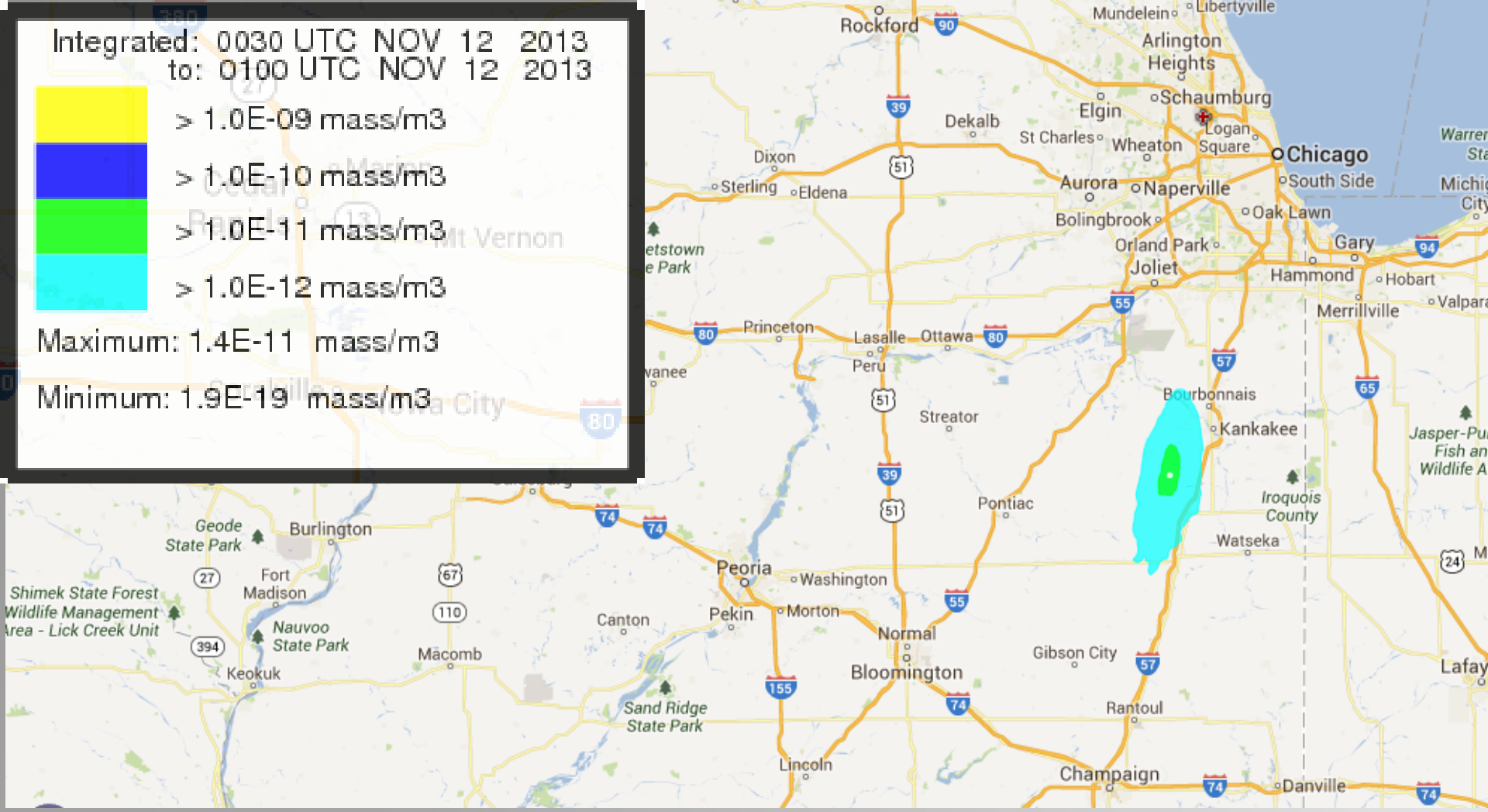
- **However if we know the chemical and specific source details…**
- **Not intended for dense gases**
- ~~**No source characteristics other than release height and amount**~~
- ~~**Assumes a steady emission rate**~~
- **Does not account for byproducts from fires, explosions, or chemical reactions**

Data We Need from You

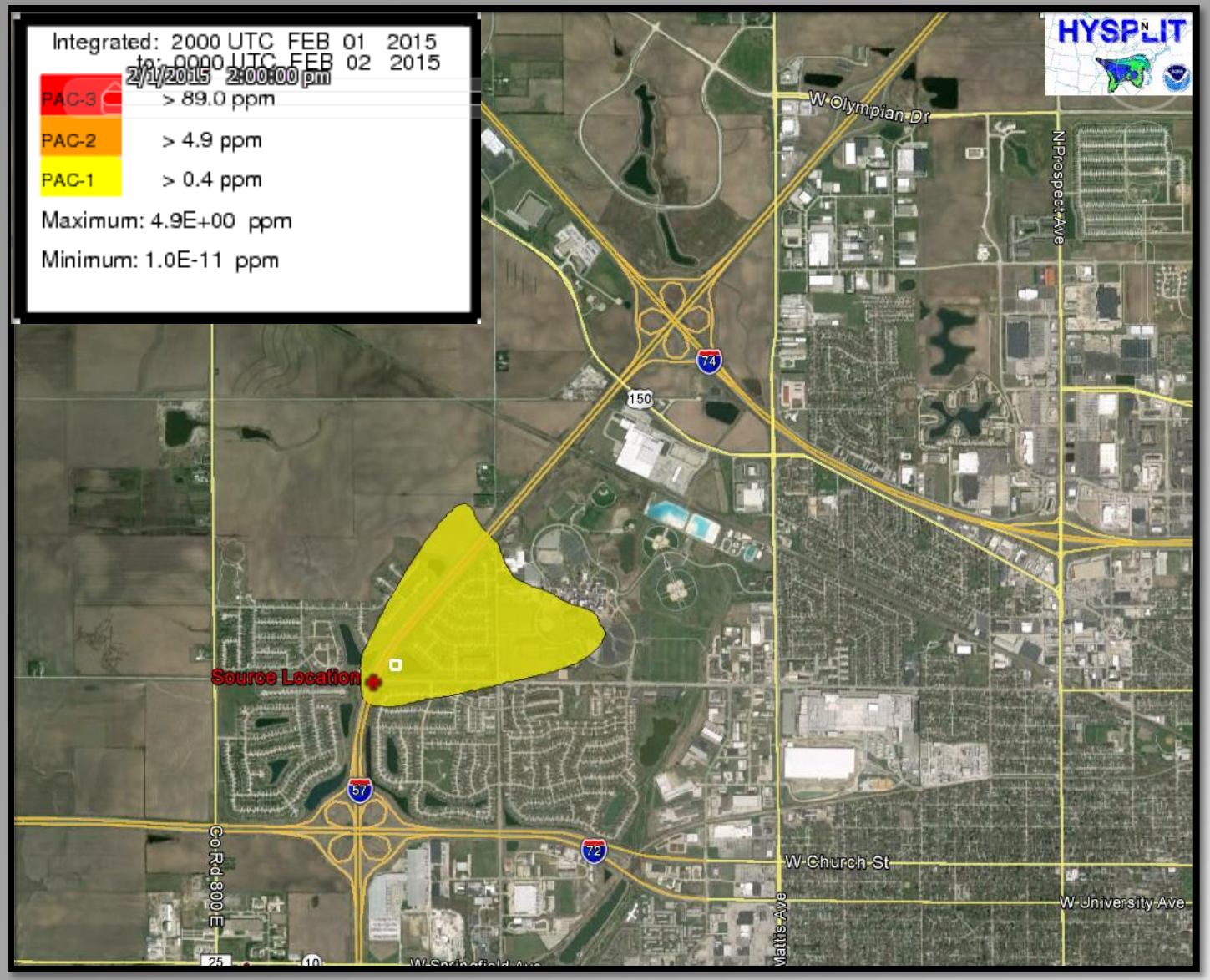
- **Primary contact (name, phone number, email, preferred method of contact)**
- **Start time of the release**
- **Lat/lon of incident**
- **Desired duration of model and output intervals**
- **Size, source, release rate & duration of release (if known)**
  - **Expected to continue?**
  - **Puddle, tanker, or pipeline**
- **Type of chemical (if known)**

In Turn, We Will Provide You With…

- **Dispersion model image output**
- **Our interpretation of the output**
- **Possible pitfalls**
- **Heads up if conditions will change**
  - **Another HYSLPIT run if necessary**
- **Our confidence level**

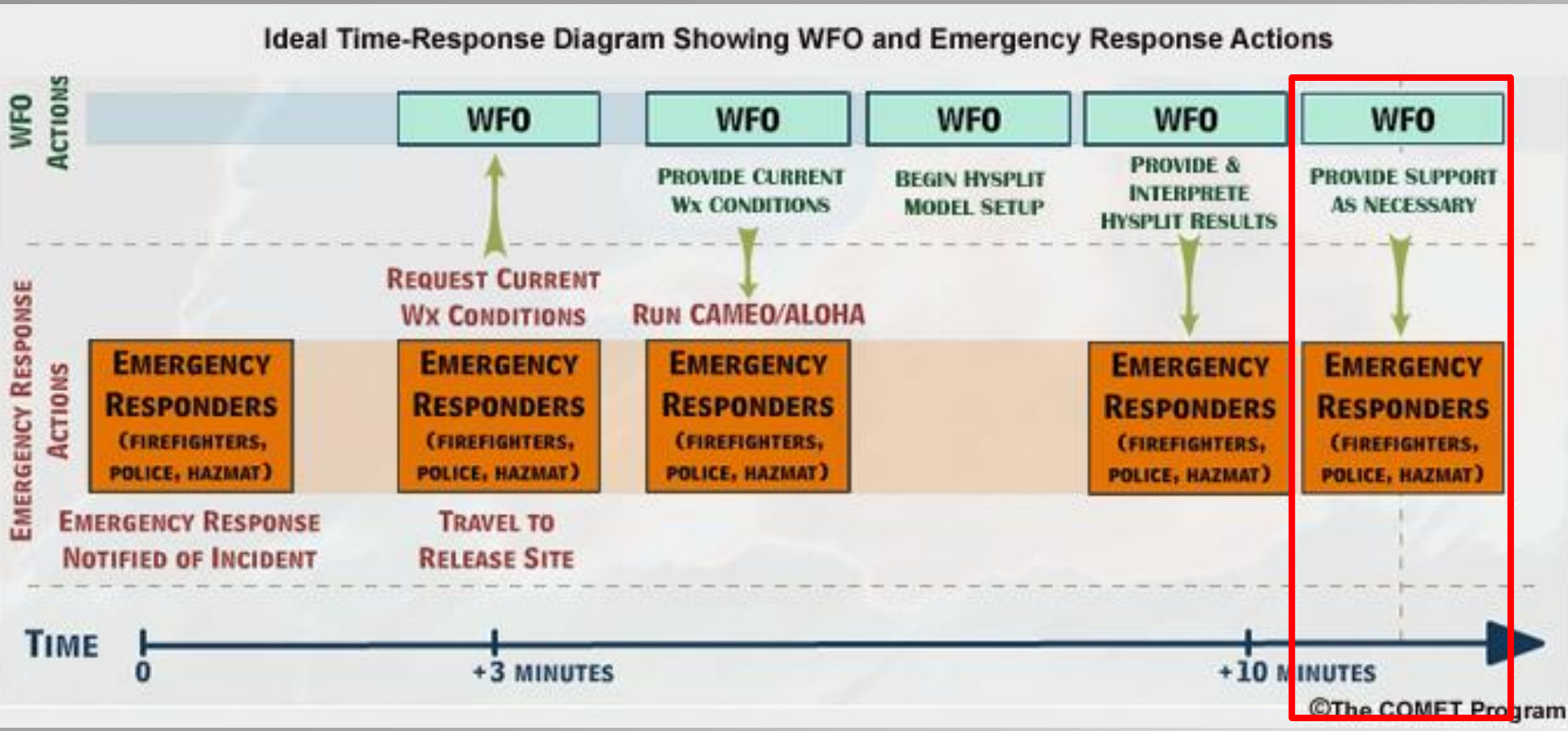


Plume concentrations are factitious unless we can use the specific chemical and emission rate! However, a responder can always use the plume direction and size as a guide.



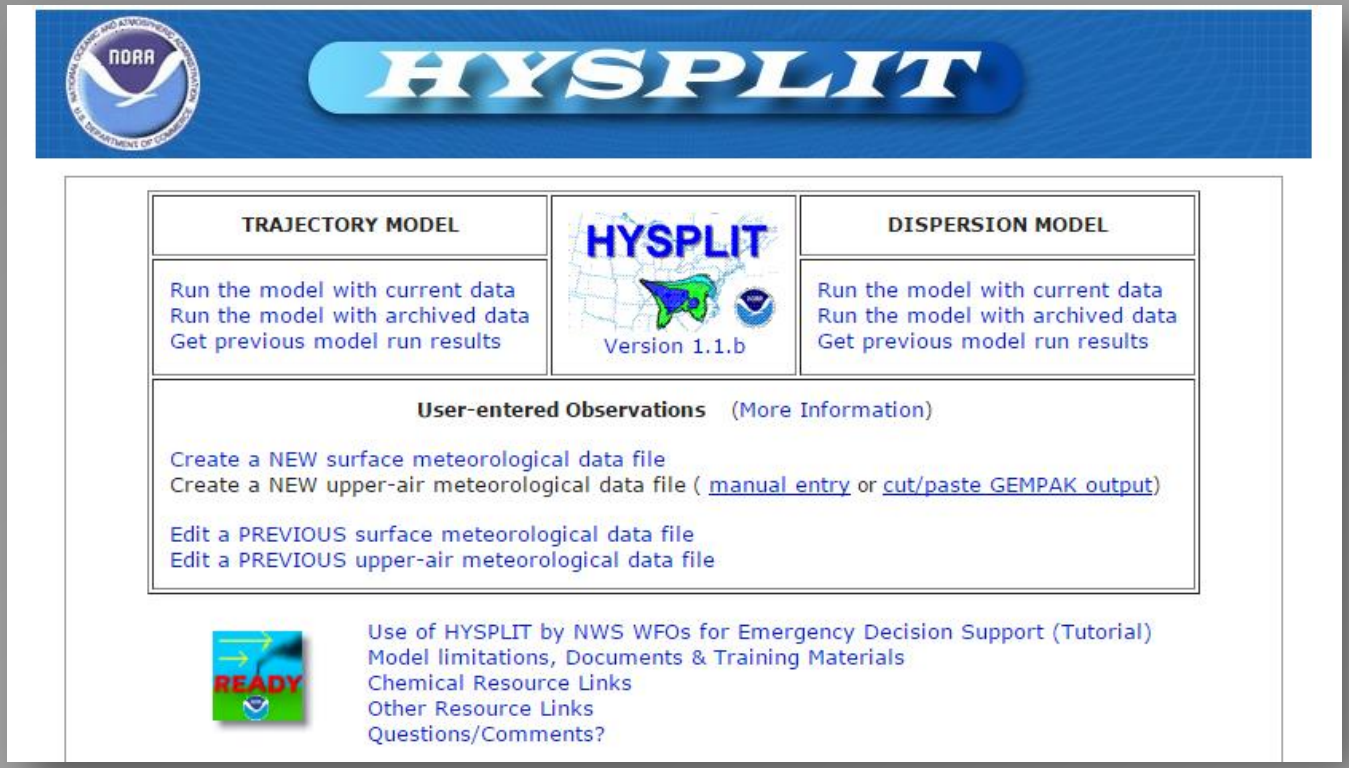
HYSPLIT/ALOHA Combo Output

with Protective Action Criteria (PAC)



Forecast updates

Additional HYSPLIT runs



HYSPLIT DEMONSTRATION

HYSPLIT RUN FOR A RELEASE WHEN THE CHEMICAL IS KNOWN

Release Type, Event, Meteorology & Source Location

Release Type: Chemical ▼ More info ▶

NOTE: You will select the specific chemical later in ALOHA.

Event Type: (optional) ◉ Exercise ○ Real Event Hazmat - Transportation ▼ More info ▶

Meteorology: RAP (18h fcst, 1 hrly, CONUS, pressure) ▼ More info ▶

View Current NAM Fire Weather Domains

◉ Use only the forecast file selected above.

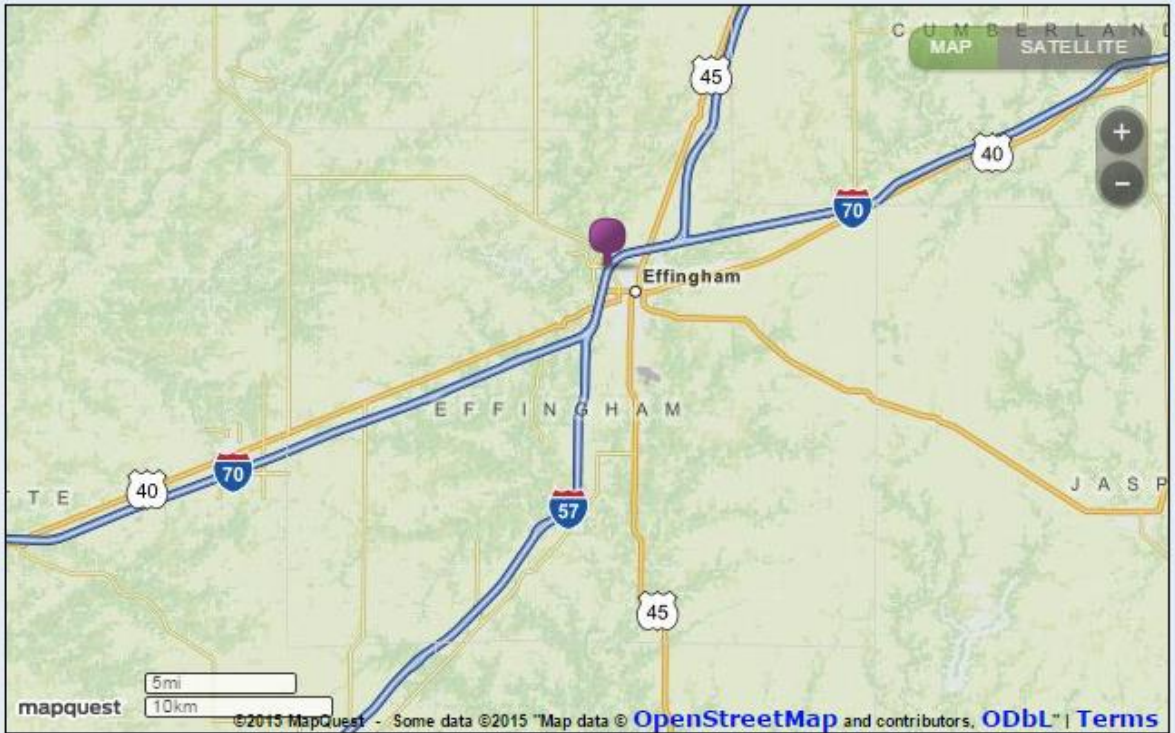
○ Use only the previously created user-entered data file.

○ Use both the previously created user-entered data and chosen forecast file.

User-entered data type: ◉ Surface Station ○ Upper-air Sounding

Source Location (enter using **one** of the following methods):

◉ Decimal Degrees Latitude: 39.1338 N ▼ Longitude: 88.5652 W ▼



Left click to select source location, click anywhere on the page to minimize the map.

Event Type: Exercise - Hazmat_Transportation
Release: Chemical
Pollutant: To be selected in ALOHA
Meteorology: RAP 20 km
Source Location: Lat: 39.133800 Lon: -88.565200

Meteorological Data & Output Options

Meteorological Forecast Cycle: 18 UTC / 20150908 ▼ More info ▶

Advanced Options: No ▼ More info ▶

Next>>

HYSPLIT

Event Type: Exercise - Hazmat_Transportation
Release Type: Chemical
Source Location: Lat: 39.133800 Lon: -88.565200
Meteorology: RAP 20 km

Source Information

The current RAP 20 km model has archive data beginning at 09/03/15 1800 UTC and 18 hours of forecast data beginning at 09/ 8/15 1800 UTC.

Release starting time (UTC): Current time: 19:41

year	month	day	hour	minute
15	09	08	19	0

More info

Source latitude: 39.133800 degrees More info

Source longitude: -88.565200 degrees (West is negative) More info

Continue to ALOHA>>

ALOHA *Source Strength*

Chemical

Source Strength Estimator for Dispersion Models

Chemical Selection

Select by: chemical name ▼

Chemical: CHLORINE (7782-50-5) ▼

Go to the CAMEO Chemicals Datasheet for CHLORINE to see:

- Physical properties
- Reactivity alerts
- Response recommendations (such as firefighting and protective clothing)
- ERG response guides and initial isolation and protective action distances (if applicable) by clicking on the linked UN/NA number on the datasheet

Go to CAMEO Chemicals Datasheet

Next >

Version: Site last modified August 28, 2013. Site based on ALOHA 5.4.4.

ALOHA developed by: Office of Response and Restoration, NOAA's Ocean Service, National Oceanic and Atmospheric Administration and the Environmental Protection Agency's Office of Emergency Management.

Web site owner: Air Resources Laboratory, NOAA's Office of Atmospheric Research, National Oceanic and Atmospheric Administration.

US Government main portal: USA.gov

Release Type

Chemical Information for CHLORINE

Molecular Weight: 70.9 g/mol
Ambient Boiling Point: -30.1 °F (-34.5 °C)
Freezing Point: -149.9 °F (-101.0 °C)

Ambient Air Temperature:
93.5 °F (34.2 °C)

CHLORINE is a **gas at the ambient air temperature**.

If you don't know any specifics of the release, assume all of the chemical is released directly into the atmosphere (choose the **Direct source**).

If you know more details, you may be able to use the Tank source or Gas Pipeline source. If the chemical is stored below its ambient boiling point, you may be able to use the Puddle source.

Choose Your Release Type:

Tank

Choose the **Tank source** to model releases of unpressurized liquids, liquefied gases, or pressurized gases from tanks or drums. ALOHA can model leaks that release the chemical directly into the atmosphere, as well as leaks that form an evaporating puddle. More info... ▶

Puddle

Choose the **Puddle source** to model releases where a puddle has already formed on the ground and is not changing in an area. If liquid is continuing to leak from a tank and spilling into a puddle (so that the puddle's area and volume are increasing) use the Tank source instead. More info... ▶

Gas Pipeline

Choose the **Gas Pipeline source** to model releases from a leaking gas pipeline; ALOHA can't model the release of liquid from a pipeline. More info... ▶

Direct

Choose the **Direct source** to model releases directly into the atmosphere. Use this option if you have too little information about a release to use another source option, but you feel that you can make an estimate of the total amount of chemical released into the atmosphere as a gas. More info... ▶

< Previous Next >

ALOHA *Source Strength*

Chemical > Release Type > Tank Description

Tank Description

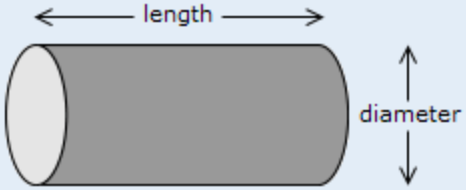
Enter basic settings about the tank that is leaking. More info about the tank source...

Tank Type and Size

Tank Type: horizontal cylinder

Tank Size: ***enter any two values*** More info...

Diameter:		
Length:	42	feet
Volume:	9000	gallons



Chemical Storage Temperature Inside of Tank

Use ambient air temperature (select this if unknown)

Storage Temperature: 93.47 ° Fahrenheit More info...

Ambient Air Temperature:
93.5 °F (34.2 °C)

< Previous Next >

ALOHA *Source Strength*

Chemical > Release Type > Tank Description > Chemical Mass

Mass of Chemical in Tank

Enter information about the amount of chemical in the leaking tank.

Mass of Chemical in Tank

Specify by: liquid level in tank (percentage full by volume) ▼ More info... ▶

Liquid Level in Tank: 90 percent full (by volume)

< Previous | Next >

ALOHA *Source Strength*

Chemical > Release Type > Tank Description > Chemical Mass > Tank Opening

Tank Opening

Enter details about the tank opening out of which the chemical is leaking.

Dimensions of Opening in Tank

Shape of Opening: circular opening

Opening Size: More info...

Diameter: 9 inches

Type of Leak

Leak Type: hole

More info...

Height of Leak

Bottom of Leak: 2 feet (above the bottom of the tank)

More info...

< Previous Next >

ALOHA Source Strength

Chemical > Release Type > Tank Description > Chemical Mass > Tank Opening > Summary

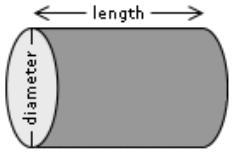
ALOHA Source Strength Summary

Source Strength Summary

- Release scenario is a nonflammable chemical that escaped from a tank as an aerosol

Tank Description

Tank Type: horizontal cylinder
Tank Diameter: 6.0 feet *(calculated)*
Tank Length: 42 feet
Tank Volume: 9000 gallons
Chemical Storage Temperature Inside of Tank: ambient air temperature (93.5 °F)



Mass of Volume in Tank

Mass Value Specified by: liquid level in tank (percentage full by volume)
Liquid Level: tank is 90% full by volume
State of Chemical in Tank: tank contains liquid
Mass of Chemical in Tank: 92,532 lbs *(calculated)*

Tank Opening

Shape of Opening in Tank: circular opening
Opening Diameter: 9 inches
Leak Type: hole
Height of Leak: bottom of opening is 2 feet above the bottom of the tank

Continue to HYSPLIT Output >

Meteorology Forecast File: RAP 20 km
Meteorology Forecast Cycle: 18 UTC / Sep 8, 2015
Release Start Time: 07:00 PM (UTC) / September 08, 2015 (1900 UTC / September 08, 2015)
Release Location: (Lat: 39.133800; Lon: -88.565200)

The following information was extracted from the forecast file at the release start time in order to run ALOHA:

Wind: 17.1 miles per hour (7.6 meters per second) from SW
Ambient Air Temperature: 93.5 °F (34.2 °C)
Cloud Cover: *data unavailable*
Stability Class: B

Event Type: Exercise - Hazmat_Transportation
Release: Chemical CHLORINE
Source Location: Lat: 39.133800 Lon: -88.565200
Meteorology: RAP 20 km

Model Run Details

Runtime Parameters

Total duration: 4 hour(s) More info

Output Parameters

Levels of Concern (LOCs):

- AEGLs (recommended) - Acute Exposure Guideline Levels
  AEGL-3: 20 ppm | AEGL-2: 2 ppm | AEGL-1: 0.5 ppm
- ERPGs - Emergency Response Planning Guidelines
  ERPG-3: 20 ppm | ERPG-2: 3 ppm | ERPG-1: 1 ppm
- PACs - Protective Action Criteria
  PAC-3: 20 ppm | PAC-2: 2 ppm | PAC-1: 0.5 ppm
- User Entered Thresholds (ppm)
  LOC-3: 0.0 | LOC-2: 0.0 | LOC-1: 0.0

More info

Display all values above zero? Yes No More info

GIS output of contours? Google Earth (kmz) GIS Shapefiles More info

The following options apply only to the GIF, PDF, and PS results (not Google Earth)

Plot resolution (dpi): 120 More info

Zoom factor: 100 More info

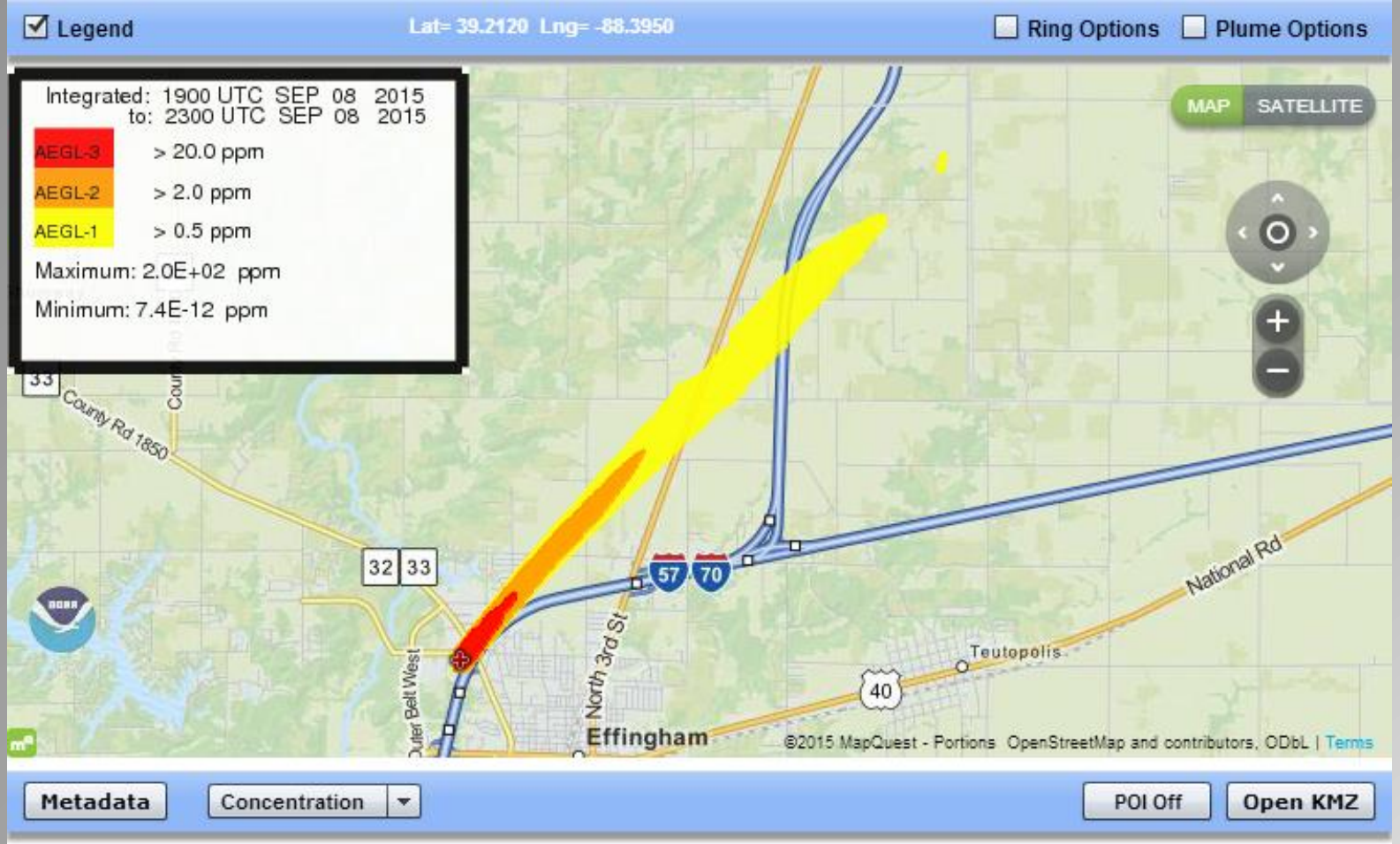
Distance circle overlay: None Auto 4 circles 0 km apart More info

U.S. county borders? Yes No More info

Postscript file? Yes No More info

Create PDF file of graphics? Yes No

Reset page to default values | Request Dispersion Run>>



MORE RESULTS	Click on text link or dropdown menu to view images in a new window.			
	GIF Plots	PDF Plots	Google Earth	Flash Maps
Primary Concentration Grid	.gif	.pdf	.kmz	.kmz

- Create customer link to these products.
- Zipped file of all graphics and diagnostics (for redistribution)

HYSPLIT RUN FOR A RELEASE WHEN THE CHEMICAL IS UNKNOWN

Release Type, Event, Meteorology & Source Location

Release Type: Unknown Material (Generic Mass, < 24 hrs) More info

Event Type: (optional) Exercise Real Event Hazmat - Transportation More info

Meteorology: RAP (18h fcst, 1 hrly, CONUS, pressure) More info

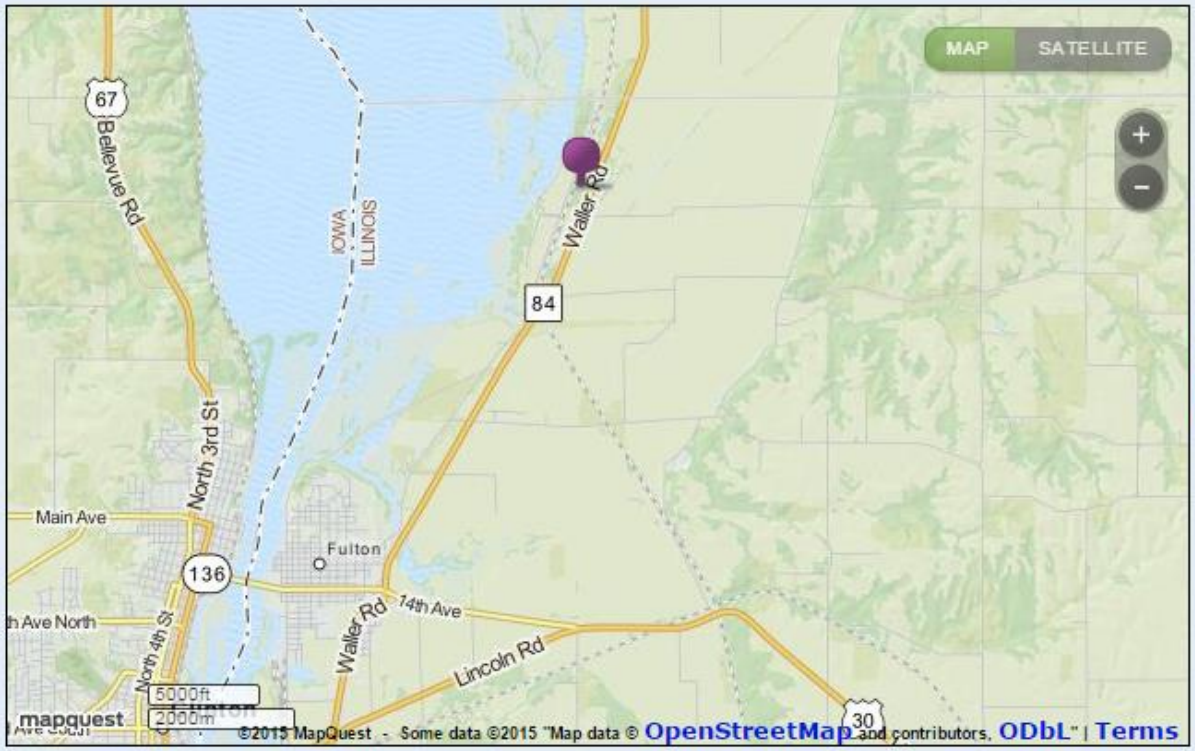
View Current NAM Fire Weather Domains

- Use only the forecast file selected above.
- Use only the previously created user-entered data file.
- Use both the previously created user-entered data and chosen forecast file.

User-entered data type: Surface Station Upper-air Sounding

Source Location (enter using **one** of the following methods):

Decimal Degrees Latitude: 41.9197 N Longitude: 90.1109 W



Left click to select source location, click anywhere on the page to minimize the map.

Event Type: Exercise - Hazmat_Transportation
Release: Unknown
Pollutant: Unknown
Meteorology: RAP 20 km
Source Location: Lat: 41.919700 Lon: -90.110900

Meteorological Data & Output Options

Meteorological Forecast Cycle:	18 UTC / 20150908 ▼	More info ▶
Deposition:	No ▼	More info ▶
Advanced Options:	No ▼	More info ▶

Next>>

Event Type: Exercise - Hazmat_Transportation
Release: Unknown
Source Location: Lat: 41.919700 Lon: -90.110900
Source Term: User Entered - 1 mass
Meteorology: RAP 20 km
Output: Concentration/deposition

Model Run Details

The current RAP 20 km model has archive data beginning at 09/03/15 1800 UTC and 18 hours of forecast data beginning at 09/ 8/15 1800 UTC.

Source Term Parameters

	year	month	day	hour	minute	
Release starting time (UTC): Current time: 20:08	15	09	08	19	25	More info

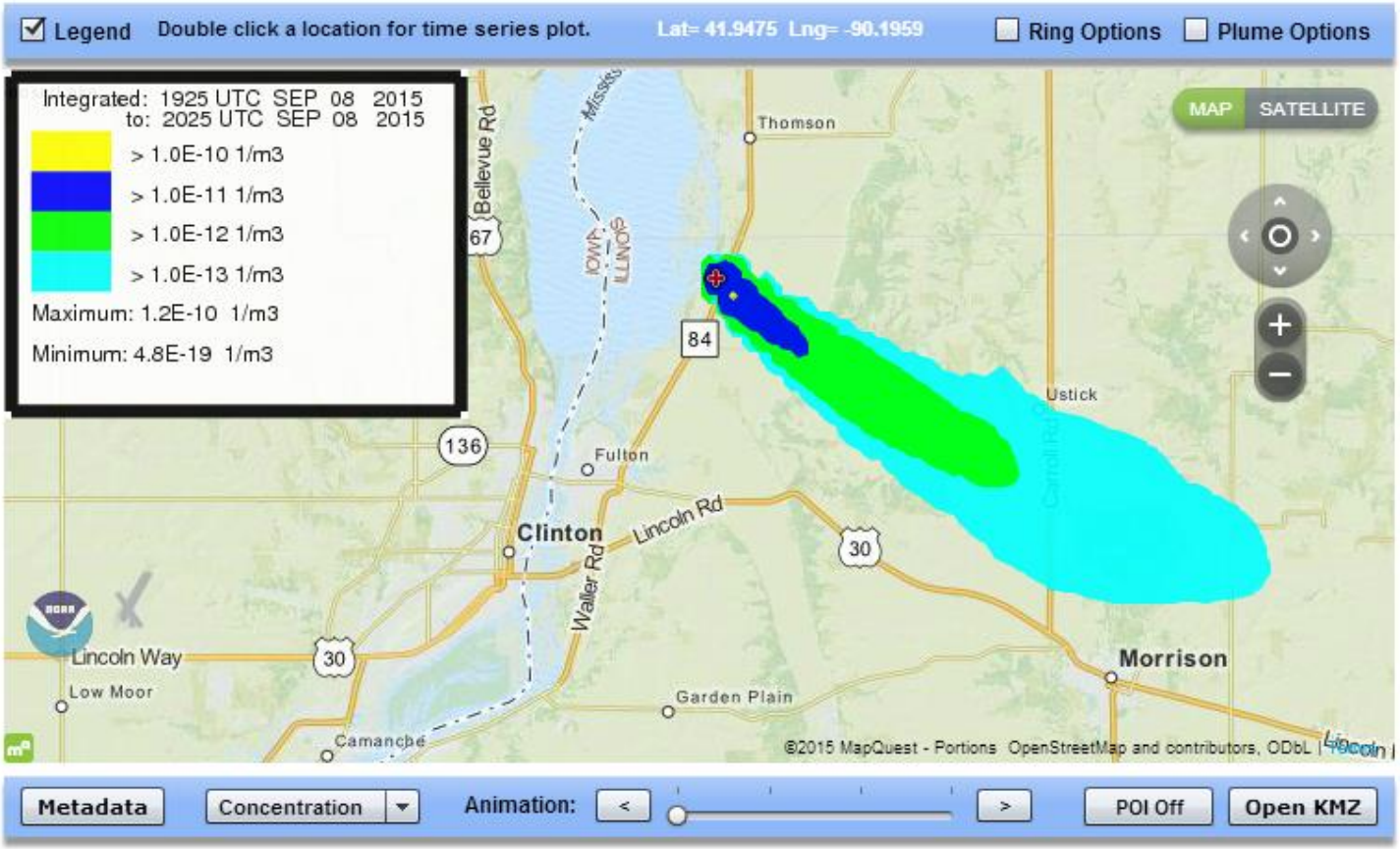
Source latitude:	41.919700	degrees	More info
Source longitude:	-90.110900	degrees (West is negative)	More info
Release top:	50	meters AGL	More info
Release bottom:	0	meters AGL	
Release quantity:	1	mass	More info
Release duration:	6 hour(s)	0 minutes	More info

Defaults for "worst case" scenario

Runtime Parameters

Total duration:	4	hour(s)	More info
Averaging period/Output interval:	1	hour(s)	More info
Top of averaged layer:	100	meters AGL (should be >= 100m)	

Default



MORE RESULTS	Click on text link or dropdown menu to view images in a new window.					
	GIF Plots	Animated GIF Plots		PDF Plots	Google Earth	Flash Maps
Concentration Grid 1	--	.gif	Java	.pdf	.kmz	.kmz
Particle Positions	--	.gif	Java	.pdf	.kmz	-
Time of Arrival	.gif	-	-	.pdf	.kmz	.kmz

- Create customer link to these products.
- Zipped file of all graphics and diagnostics (for redistribution)

DISSEMINATION PHASE

Non-Weather Emergency Messages

- Messages used to alert the general public about various emergencies and hazards
- Applicable for the full spectrum of emergencies
- Works at local, state, regional, and national levels

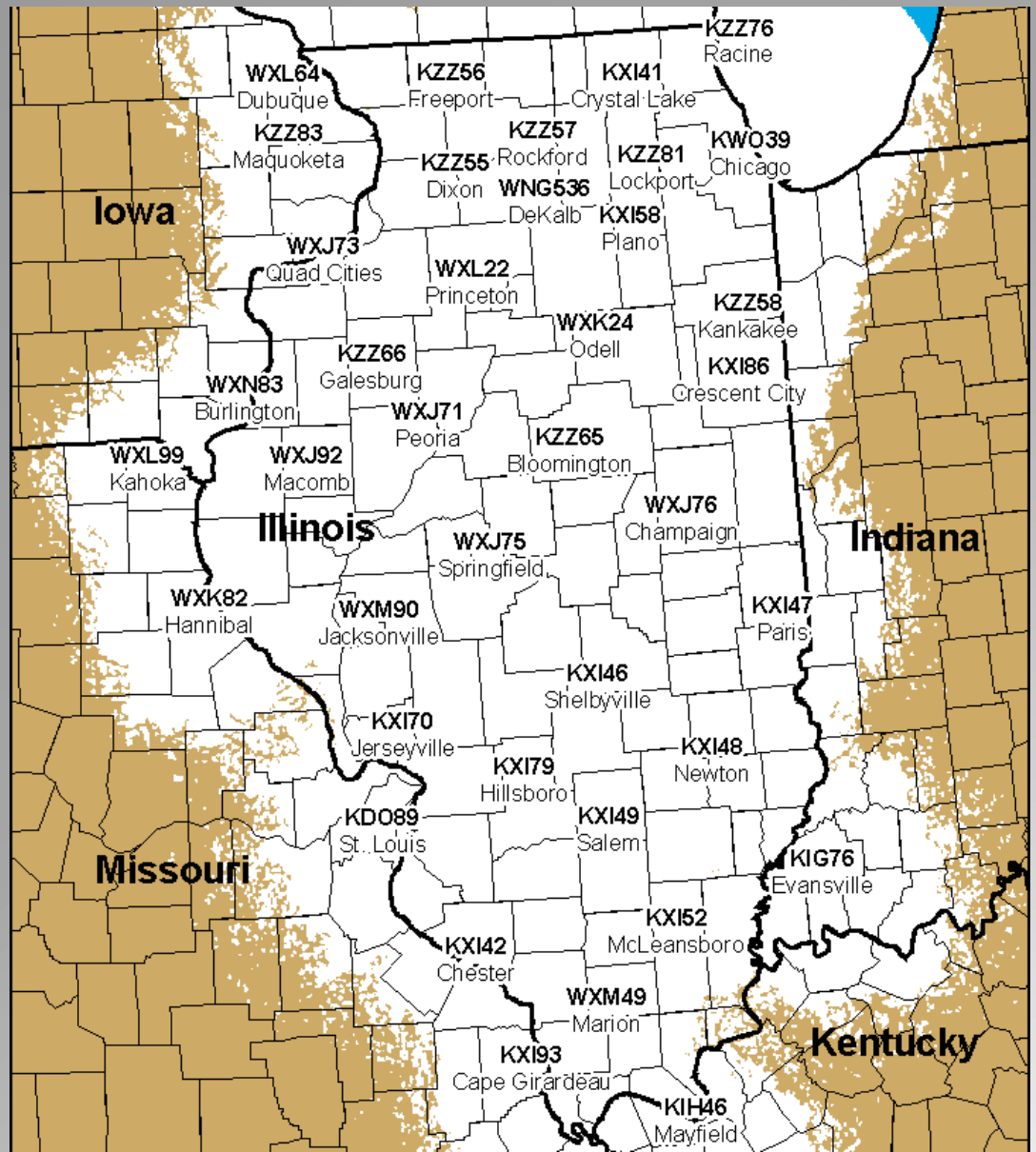
Non-Weather Emergency Messages

- Message distributed via Emergency Alert System:
  - NOAA Weather Radio All Hazards – NWS entry point
  - Media distribution

NOAA Weather Radio/EAS Activation

- Public safety is involved
- Official Information
- Time Critical
- No other means of disseminating the information rapidly
- Information length and format is consistent with other NWR broadcast material
- Information should be non-routine and infrequent

Weather Radio - All Hazards



NWR Message Options

- Evacuation Notice
- Hazardous Material Warning
- Local Area Emergency
- Law Enforcement Warning
- 9-1-1 Telephone Outage Emergency
- Nuclear Power Plant Warning
- Radiological Hazard Warning
- Shelter in Place Warning

We need the message from an official source

Integrated Public Alert & Warning System

http://www.fema.gov/integrated-public-alert-warning-system

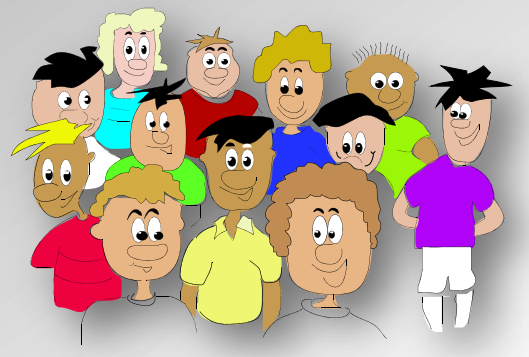
- County EMs and state agencies can send NWEMs
- EM must take training and purchase software
- Messages go through Wireless Emergency Alerts
- Activates EAS to get the alerts out through TV and radio
- Does not go to NWR automatically!

HAZ*Collect*

www.weather.gov/os/hazcollect

- An all-hazards, automated, emergency message collection system
- A NWS program developed and implemented in collaboration with FEMA / DHS
- An optional method to disseminate Non-Weather Emergency Messages (NWEMs)
- Integrates with EAS
- Uses Common Alerting Protocol (CAP)

HAZ*Collect*
speeding emergency messages to the public

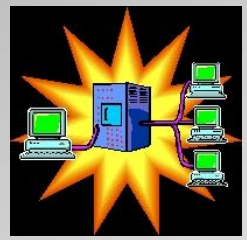


HAZ*Collect* Process

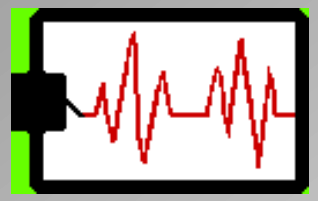
Incident occurs

Message Prepared

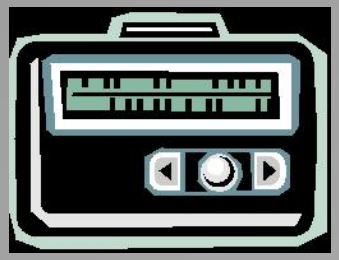
Message Posted via DMIS, DM-OPEN, IPAWS-OPEN



Message in **HAZ*Collect***



Message thru NWS



Broadcast over <u>all</u> NWS comms systems

Can't stop message after posting!

HAZ*Collect* References

weather.gov/os/hazcollect

- Registration overview
- Training links
- Resources (documents, links, presentation)

http://www.fema.gov/integrated-public-alert-warning-system

- Resources (documents, links, presentation)

NWEM Distribution

- Three methods
  - Manual contact with NWS
  - Local/state EAS arrangements
  - **HAZ*Collect*** (computer based)

Recap

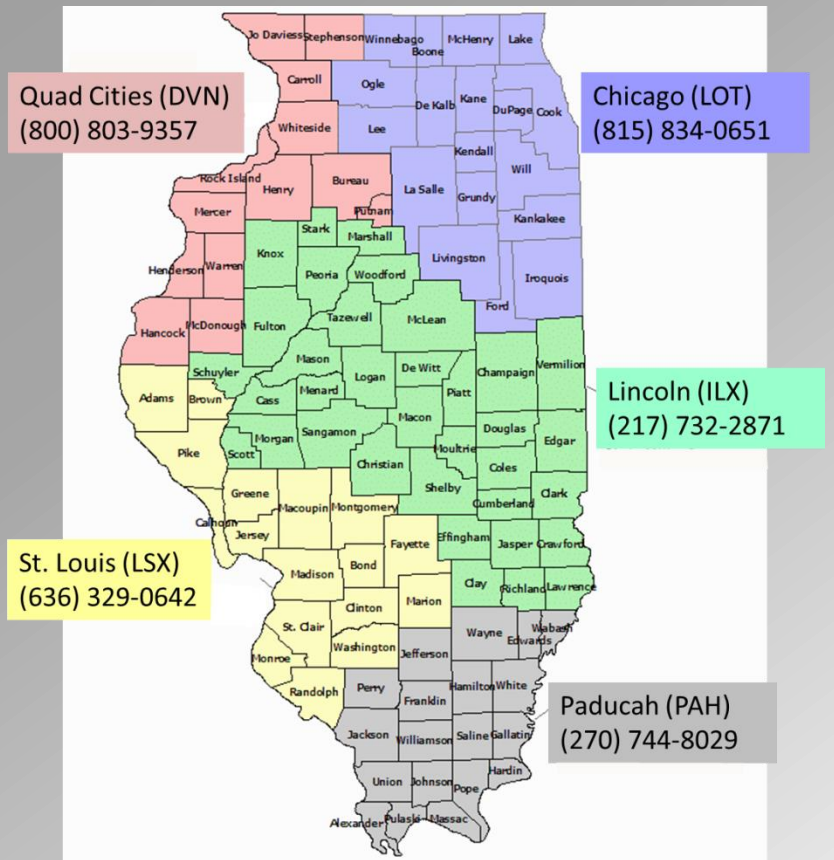
- We can provide weather & dissemination support
  - Current & future conditions
  - Dispersion model results
  - Weather Radio
- BUT we don't know what we don't know
  - What is happening
  - Who to contact
  - Your needs
  - How to get information to you

NWS

http://www.weather.gov/

HAZCollect
speeding emergency messages to the public

http://www.weather.gov/os/hazcollect/



“There's no harm in hoping for the best as long as you're prepared for the worst.”
— Stephen King

Questions?

Jamie.Enderlen@noaa.gov
Chris.Miller@noaa.gov